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meagre at any rate, so it is probable that these few notes merit special publication.

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DESCRIPTION OF THE SPAWNING HABITS OF *Pseudopleuronectes americanus* IN CAPTIVITY.

At the Woods Hole fish cultural station the Winter Flounder is allowed to spawn naturally in large wooden tanks, which act they perform always at night although they are under the glare of the electric lights used for purposes of illumination. The act was reported to take place usually between 10:00 P. M. and 3:30 A. M., and this was substantiated by observation. At 3:00 A. M. on February 24, 1921, the following notes were made.

There appeared to be no distinct pairing, and in this case five fish partook of the action. Three were males and two females. Previous to the time of spawning they exhibited considerable activity, restlessly swimming about, especially in the case of the females. These were seen to "nose" around the males, but this may have been more or less incidental.

The essential part of the act seemed to be a rapid swimming in a circle about a foot in diameter, or more properly, an upward spiral of very slight pitch. In all cases they swam counter clockwise, which presented the vent outwards. As the fish gyrated around in this manner the genital products were discharged. The entire five examples observed thus moved in intersecting circles, or ones nearly so, for about 10 seconds, at the end of which time they all sank apparently exhausted, to resume their sluggish existence resting on the bottom.

In the case of the females the eggs were so extruded that they flowed along the upper side of the long anal

fin and out over the tail from which they appeared to drop off into the open water. Due to the rapid movements of the fish, the eggs were flung in all directions by centrifugal force. The central whirling mass, the fish itself, and the long stream of eggs flying off in all directions reminded the writer of nothing so much as the pyrotechnic pinwheels of old time independence day celebrations. By the time the orgasm was three-quarters over the water became so clouded with milt and eggs that very little could be seen of the whirling specimens. The other occupants of the tanks appeared to simply "sit by" and watch.

On a previous night, Feb. 22, also at 3 A. M., two females in one of the large glass fronted aquariums, went through a similar performance, but the males in the tank took no part. Why they failed to, the writer will not venture to speculate upon, as many were present which were perfectly ripe. The impression was gathered, however, that the males were much less interested in the proceedings in general, than the females. The belief is that this is an abnormal condition due to the fright or disturbance of confinement, and that while the males can usually hold their milt the females get to a point where it is imperative that the eggs be discharged, thereby bringing about this apparent reversal of sexual instincts. Probably in a state of nature the actual spawning is performed in a rather similar manner, but very likely the male urges the female on in a manner not observed in confined specimens.

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EXTENSION OF THE RANGE OF *ASCAPHUS TRUEI* STEJNEGER.

Three specimens, two males and a female, of *Ascaphus truei* Stejneger, the Discoglossoid toad, were collected on September 21, 1921, in the Cascade